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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/502,244	01/28/2005	Peter Carmeliet	DECLE70.003APC	9196

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EXAMINER	
CHONG, KIMBERLY	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/502,244	CARMELIET ET AL.	
	Examiner	Art Unit	
	Kimberly Chong	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application/Amendment/Claims

Applicant's response filed 07/31/2006 has been considered. Rejections and/or objections not reiterated from the previous office action mailed 05/02/2006 are hereby withdrawn. The following rejections and/or objections are either newly applied or are reiterated and are the only rejections and/or objections presently applied to the instant application.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

With entry of the amendment filed on 07/31/2006, 3-10 are pending in the application.

Response to Applicant's Arguments

Re: Claim Rejections - 35 USC § 112

The rejection of record of claims 3-10 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn in response to claim amendments filed 07/31/2006.

Re: Claim Rejections - 35 USC § 102

The rejection of claims 3-6 under 35 U.S.C. 102(b) as being anticipated by Majka et al. (cited on PTO form 892 filed 12/19/2005) and evidenced by Peichev et al. (cited on PTO form 1449 filed 7/22/2004) is maintained.

Applicant's arguments filed 07/31/2006 have been fully considered, but they are not found persuasive. Applicant argues Majka et al. do not teach a role for AC133 in pathological angiogenesis and there are no teachings in Majka et al. that would lead one to use AC133 in a screen for molecules which could be used to treat pathological angiogenesis. Applicants further argue Peichev et al. merely teach that there is evidence for a population of CD34+ cells that co-express AC133 and VEGFR-2 which have the capacity to migrate and differentiate into mature endothelial cells which supports the existence of circulating endothelial precursors with the potential to contribute to postnatal angiogenesis. Applicants state neither Majka et al. nor Peichev et al. teach a direct role for AC133 in angiogenesis and do not teach testing of molecules that bind to prominin-1 or to nucleic acids that encode prominin-1 as a treatment for pathological angiogenesis.

The instant claims are drawn to a method of screening for molecules comprising exposing prominin-1 or nucleic acids encoding prominin-1 to at least one molecule and determining binding or hybridizing of said molecule and monitoring said pathological angiogenesis. The specification as filed does not specifically define "monitoring said pathological angiogenesis". However, the specification at page 9 discloses the instant method is also referred to as a "drug screening assay" wherein the steps include

screening the compound or agent for the "ability to interact with prominin-1". The specification at page 4 discloses "Measurement of molecules that bind to the prominin-1 protein and inhibit the activity of prominin-1 can, for example, be carried out by various methods for determining pathological angiogenesis as described in the examples of the present invention." Example 2.1 discloses studying pathological conditions of angiogenesis in PROM-1 deficient mice wherein determination of blood vessel formation was evaluated by counting endothelial cells (see page 12). Therefore, monitoring of pathological angiogenesis in the context of the instant invention as claimed would be determining hybridization of a molecule or agent to a gene encoding prominin-1 and determining whether the molecule would effect the growth of blood vessel formation i.e. endothelial cells.

Majka et al. teach exposing CD34+ cells to an antisense compound targeted to prominin-1 and measuring the formation of haemotopoietic colonies (see page 58 and Figure 5). As stated in the previous Office action, CD34+ cells are endothelial cells of the bone marrow which are involved angiogenesis, as evidenced by Peichev et al. Therefore, Majka et al. teach a method of testing for antisense molecules that bind to a nucleic acid encoding prominin-1 and determining the ability of said molecule to inhibit the growth of endothelial cells involved in angiogenesis. The "monitoring" of said pathological angiogenesis would be the determination of whether or not the binding of said antisense compound targeted to a nucleic acid encoding prominin-1 taught by Majka et al. would in fact effect the growth of endothelial cells involved in blood vessel formation. As such, Majka et al. teach testing of an antisense molecule that binds to

prominin-1 or to nucleic acids that encode prominin-1 to determine whether the inhibition of prominin-1 has any effect on endothelial cell growth.

Thus, Majka et al. anticipates claims 1-6 of the instant application.

The rejection of claims 3-6 under 35 U.S.C. 102(b) as being anticipated by Peichev et al. is withdrawn in response to Applicant's arguments filed 07/31/2006. While Peichev et al. does not specifically teach molecules that inhibit the expression or activity of prominin-1, Peichev et al. continues to be relied upon for teaching CD34+ cells expressing prominin-1 differentiate into mature endothelial cells and therefore would be involved in angiogenesis.

Re: Claim Rejections - 35 USC § 103

The rejection of record of claims 3-10 under 35 U.S.C. 103(a) as being unpatentable over Peichev et al. (cited on PTO form 1449 filed 7/22/2004) and Majka et al. (cited on PTO form 892 filed 12/19/2005) in view of Babinet et al. (An. Acad. Bras. Cienc. 2001) and in further view of Murphy et al. (US 2003/0045489) is maintained.

Applicant's arguments filed 07/31/2006 have been fully considered, but they are not found persuasive. Applicant relies on the arguments cited above and states Majka et al. do not teach a role for AC133 in pathological angiogenesis and there are no teachings in Majka et al. that would lead one to use AC133 in a screen for molecules which could be used to treat pathological angiogenesis. Applicants further argue Peichev et al. merely teach that there is evidence for a population of CD34+ cells that

co-express AC133 and VEGFR-2 which have the capacity to migrate and differentiate into mature endothelial cells which supports the existence of circulating endothelial precursors with the potential to contribute to postnatal angiogenesis. Applicants state neither Majka et al. nor Peichev et al. teach a direct role for AC133 in angiogenesis. Applicants further argue Majka et al. do not suggest the use of a knockout model to screen drugs that maybe useful in the treatment of pathological angiogenesis and this deficiency is not corrected by the teachings of Babinet and Murphy because neither teach or suggest a screening method for molecules effective against pathological angiogenesis.

The instant claims recite a method of identifying molecules that have a different effect in the knockout model compared to the normal subject. Applicants acknowledge Majka et al. states the use of a prominin-1 knockout murine model for further characterization of prominin-1. Because Majka et al. teach a method of testing for antisense molecules that bind to a nucleic acid encoding prominin-1 and determining the ability of said molecule to inhibit the growth of endothelial cells involved in angiogenesis and suggest the use of a knockout model to further elucidate the role of promonin-1, one of skill in the art would have been motivated to make a mammalian murine knockout model for the treatment of pathological angiogenesis. Babinet et al. is relied upon to teach the generation of a knockout mouse model for the study of mammalian biology and Murphy et al. is relied upon to teach the use of a mammalian knockout model to identify molecules for the ability to inhibit angiogenesis using the knockout murine model (see paragraph 0166). Therefore, as stated in the previous

Office action, one would have been motivated to make a knock-out model because Babinet et al. teach the use of murine knock-out mice is a common way to study the function of genes and more importantly, a way to study the development of appropriate therapies for specific diseases and further, one would have been motivated to make a prominin-1 knock-out model to screen for molecules that modulate AC133 because Murphy et al. teach knock-out animals that simulate a disease associated with angiogenesis are useful to screen for molecules the have anti-angiogenic properties.

Thus in the absence of evidence to the contrary, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Chong whose telephone number is 571-272-3111. The examiner can normally be reached Monday thru Friday between 7-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached at 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866).217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For more information about the PAIR system, see http://pair-direct.uspto.gov.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Kimberly Chong
Examiner
Art Unit 1635